Commercial Space and Spacepower

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Spacepower

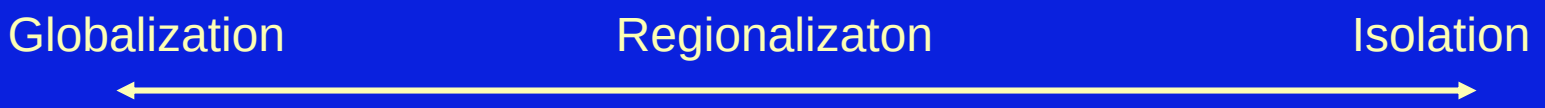
- Economic and commercial power:
  - Monopoly
  - Dominant competitive position
    - Large market share; ability to set worldwide standards
- For this presentation spacepower will ignore
  - Aggressive actions in space
  - Denying others access to space
- But, it is assumed that a stable space environment can be enforced.
  - International organizations, regulations, agreements
  - A very powerful nation(s) enforcing rules

The Changing International Space Environment: 1960 to 2007

- Globalization of networks (industrial, financial, information)
  - Affects commercial space in both supply and demand
- Technological capabilities have spread to many nations
  - U.S. is no longer the only highly capable commercial supplier
- “Privatization” -- Governments as one of many purchasers
- Worldwide consolidation of space firms
  - “oligopolistic competition”
- Growing regulatory environment--national interests
  - For security, and non-proliferation purposes
  - For safety, environmental, and economic protection

Globalization

- Different types of globalization
  - Geopolitical
  - Multinational corporations, financial markets
  - Information and networks



- Globalization is not inevitable
  - Has progressed unevenly and with setbacks

Globalization and Space

- On the supply side dual-use space capabilities have:
  - Created worldwide instant communications
  - Enabled images of large areas as well as high-resolution images for location-specific purposes
- All of which lead to a reinforcing pattern of greater globalization
  - Through better and faster communications, and
  - Through expanded potential markets
- Space activities require very high up-front investments, the larger the market potential, the better the profit opportunity
- The more produced the lower the average costs.
- Therefore, higher demand coupled with lower costs leads to continued growth and expansion of services.

Globalization and Space

- On the demand side globalization
  - Raises consumer expectations of the availability of new goods and services
    - Enables demand for space products to increase
  - Which, with open borders and markets, encourages commercial space investments, and
  - Likely future price decreases due to larger sales.

U.S. Policy: Commercial Space

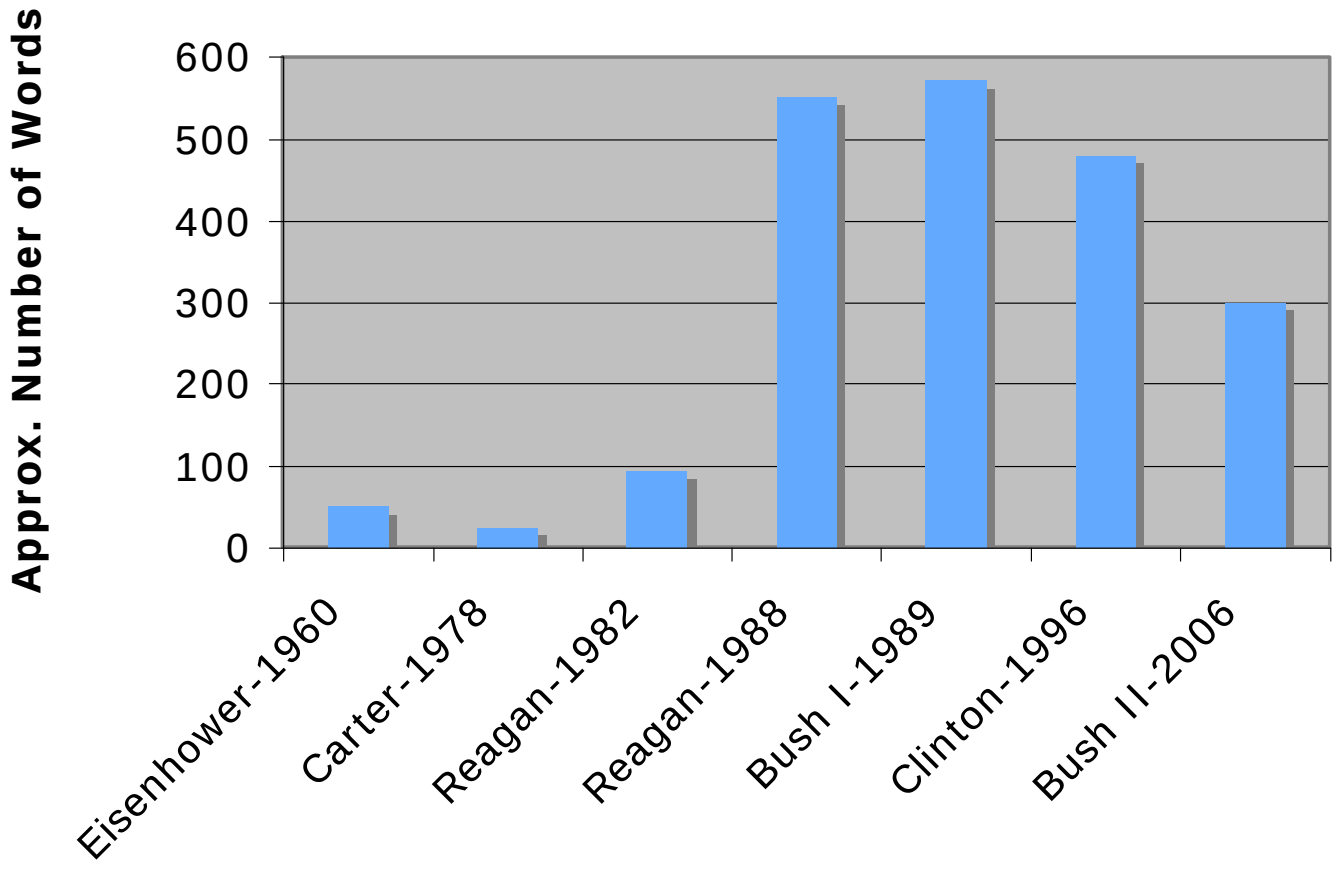
- Official government policy on commercial space
  - Presidential Decisions and Memos on Space Policy
  - Presidential Decisions and Memos on Telecommunications
  - Policy as reflected in space legislation & regulations
  - Other governmental actions and regulations affecting commercial space (budgets, anti-trust, trade, competitiveness, R&D, etc.)
- U.S. commercial space policy is complex, cannot be separated from non-space economic policy, and sometimes produces unintended results that may contradict “official space policies.”

Trends in Government Policy

(Eisenhower to Present: 1957 to 2007)

- Early policies reflect Cold War era: security, U.S. leadership in technology race
- No commercial policy; mainly references to economic growth and spin-offs
- By Clinton Administration, commercial space policy was many pages long
- Basic approach to spacepower (U.S. dominance) has not changed over time

Chart 1: Commercial Space in Presidential Space Policy



Telecommunications Policy

- Separate policy treatment from overall space policy
- Early years: policy aimed at developing a U.S. monopoly in telecommunications
  - Even to the point of an official position that refused to launch operational telecommunications satellites of foreign nations.
- Kennedy Administration:
  - Stimulation of competition w/in the United States for NASA R&D contracts in telecommunications (aimed at AT&T monopoly)
- Comsat, Intelsat, and private telecommunications ventures--U.S. and, in more recent years, foreign
  - ACTS program as indicator of changes in approach to research

Other Policies

- Since the 1990s, as other areas of space have become both larger and of more commercial value, separate policies have addressed:
  - Remote Sensing
  - Transportation
  - Navigation and GPS
- All sub-groups of space policies are consistent with the overall directives on space.

Legislative Actions

- Legislation often incorporates Administration Space Policies verbatim
- Legislation enables regulatory actions
- NASAct of 1958 as amended over time
- CSLA of 1984, as amended
- Remote Sensing
  - Privatization studies in 1979/80
  - Transfer to NOAA in mid-1980s with expected commercialization (except for weather satellites)
  - More recent remote sensing legislation

Other Government Space Regulatory and Policy Actions

- Deregulation as a government philosophy--stimulate commercial competitiveness
- GPS in mid-90s; led to policy to guarantee free signal and turn selective availability off
- Export controls--major tightening in 1999
- DOD effort to stimulate industry consolidation
- Growth of government deficit and change in priorities
- Efforts to commercialize and privatize space assets

International Space

- Growth of foreign capabilities and commercial space endeavors
  - Europe: Ariane, Spotimage, Galileo
  - Russia: Commercial launch vehicles; Glonass
  - China: Human Space, launch vehicles
  - Others: Japan, India
  - Emergence of developing world in space
- Consolidation to compete with U.S.
  - Corporate
  - Regional agreements

International Space

- Examples of unintended foreign commercial incentives resulting from U.S. policies
  - Symphonie (U.S. refusal to launch operational telecommunications satellite)
    - One factor which stimulated a commercial Ariane
  - Shuttle decision (no R&D for ELVs)
    - Again, stimulated Ariane to be optimized for geosynchronous telecommunications orbits
  - Export controls
    - Stimulated “ITAR-free” product lines abroad

International Space

- Foreign capabilities today have become essential for some U.S. missions
  - Soyuz as launching system for ISS
  - Joint dependence on weather satellites
  - Purchase of remote sensing imagery
  - Available bandwidth for telecommunications
  - Ground receiving equipment for GPS

Policymaking in the U.S. is Complex

- Space policy, in order to be effective, must be coordinated with other policies; a very difficult process, particularly in the commercial arena

Priorities

- Security policy trumps commercial space policy
- Security policy trumps economic policy
- Economic policy trumps space policy

therefore,

- Commercial space policy will not be the driver of spacepower in the U.S.

and,

- Commercial space policy can easily be undermined by these other policies

and,

- Most other nations are very explicit that economic policy is a major part of space policy

Summary

- Economic/business factors
  - Profit motive--investment only with sufficient ROI
    - ROI can include government revenues
    - If global market opportunity is denied, fewer purely commercial investments
  - If increased risk of loss of assets from *either* domestic or foreign security initiatives, fewer commercial investments will occur.
- Important questions:
  - Do national objectives require space business investment?
  - Are foreign commercial space assets essential to domestic security?
- Clear answer is yes!

Summary

- Economic dominance of U.S. in space, once lost is unlikely to be easily or quickly recovered
  - Future policy needs to reflect this reality
- Limited options for the future
  - Treat commercial space as “just another commodity”
    - Ignores the dual-use nature of most space applications
  - Dominance and control through military actions
    - Will encourage counter measures by others with uncertain outcomes and increase commercial risk factors
  - Stimulate renewed economic competitiveness in U.S.
    - May not be consistent with export restrictions and other U.S. policies related to free trade and competitiveness

Is There A Solution?
Spacepower through Commercial Strength

- Find ways to keep U.S. technological leadership in space
  - Encourage R&D in areas likely to advance commercial space
    - An “offence” rather than a “defense” for future commercial products
  - Produce the best products to encourage worldwide purchase of U.S. goods and services
    - Leadership and spacepower through market dominance
  - Eliminate regulatory disincentives without jeopardizing security or public safety